

APPENDIX B
BIOLOGICAL ASSESSMENT REPORT

**Federally-Listed Threatened and Endangered Species/State Rare,
Threatened, and Endangered Species Assessment and Jurisdictional
Waters/Wetlands Assessment**

**Proposed Lyles-Saluda River-Lake Murray 230 kV Line
Lexington and Richland Counties, South Carolina**

Prepared for:

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Introduction

Pike Energy Solutions contracted Palmetto Environmental Consulting, Inc. (PEC) to conduct professional services on the proposed Lyles-Saluda River-Lake Murray 230 kV Line project generally located between the Saluda Shoals Dam at Lake Murray and the Lyles substation in Lexington and Richland counties, South Carolina ("Project Area," Appendix B, Figures 1 and 2). According to mapping provided to PEC by Pike Energy Solutions, the Project Area starts at an existing substation located on SCE&G-owned property behind the Saluda Shoals Dam, runs south across the Saluda River, turns to the southeast for approximately four miles, then turns east to the end of the line at the Lyles substation in Richland County. The Project Area is generally located on the east/northeast/north side of the existing transmission line right-of-way and totals approximately 9.8 miles in length.

Specific services provided by PEC included: 1) conducting a survey for federally- and state-listed threatened and endangered species, and a habitat assessment for state-listed rare species with S1, S2, or S3 designations within the Project Area; and 2) delineating jurisdictional waters/wetlands located in the Project Area. The purpose of this report is to provide the results of the federal and state protected species assessment and species of concern habitat assessment, and a brief description of jurisdictional waters/wetlands located within the Project Area. For purposes of the species and habitat assessment, PEC addresses only those species listed by the United States Fish and Wildlife Service (USFWS) as federally threatened or endangered, and those species listed by the South Carolina Department of Natural Resources (SCDNR) as State Threatened/Endangered, S1 (critically imperiled state-wide because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation), S2 (imperiled state-wide because of rarity or factor(s) making it vulnerable), or S3 (rare or uncommon in state).

Site Description and Jurisdictional Waters

Between February 2012 and December 2013, PEC conducted a jurisdictional waters/wetlands delineation on the Project Area. During the delineation, orange "Wetland Boundary" surveyor tape was placed at regular intervals along the wetland boundary, and the location of each wetland flag was collected with a Trimble GeoXT GPS unit. Exhibits were created depicting the approximate boundaries of jurisdictional waters within the Project Area (Appendix B, Figures 3a through 3e). These areas total approximately 2.5 acres of wetlands and 1880 linear feet of stream. Not included in this total are portions of the Saluda River, the emergency spillway for the Saluda Shoals Dam, the Broad River, the Columbia Canal, and ponds within the Project Area; all of these waters are also jurisdictional and total 7.4 acres (1030 linear feet). Note the only portion of the delineation that has been verified by the US Army Corps of Engineers (USACE) is that portion of the Project Area located between Davega Road and the eastern end of the proposed Saluda River Substation Site in Lexington County. This segment was delineated and verified as part of services PEC rendered on the Saluda River Substation Site project. PEC recommends obtaining a Jurisdictional Determination from the USACE on the remaining portions of the Project Area prior to any onsite construction activities.

Wetlands and streams within the Project Area are contiguous with larger wetland or stream systems. Most waters within the Project Area flow to tributaries that in turn flow to the Saluda River. These waters are scattered throughout essentially the entire segment. Only waters located at the eastern end of the Project Area do not flow to the Saluda River; these waters flow to the Broad River. At the time of field investigations, some wetlands were saturated and even inundated, while others were fairly dry. Streams ranged from just one foot in width to 25 feet or more in width (12 Mile Creek, 14 Mile Creek, and an unnamed tributary to the Broad River near the Lyles substation).

The transmission line ROW appears to be regularly maintained, as only low shrubs and herbaceous species were present at the time of field investigations. Upland vegetation consists of dozens of species, some of the most common being sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), hickory (*Carya glabra*), tulip poplar (*Liriodendron tulipifera*), red oak (*Quercus falcata*), winged sumac (*Rhus copallinum*), dogfennel (*Eupatorium capillifolium*), broomsedge bluestem (*Andropogon virginicus*), blackberry (*Rubus*

sp.), goldenrod (*Solidago* sp.), greenbrier (*Smilax* sp.), honeysuckle (*Lonicera japonica*), and evening trumpetflower (*Gelsemium sempervirens*).

Wetland vegetation also consists of dozens of species, some of the most common being bushy bluestem (*Andropogon glomeratus*), plume grass (*Erianthus contortus*), giant cane (*Arundinaria gigantea*), cinnamon fern (*Osmunda cinnamomea*), netted chain fern (*Woodwardia areolata*), common rush (*Juncus effusus*), tearthumb (*Polygonum sagittatum*), and various sedges (*Carex* sp.) and grasses. Vines consist of muscadine (*Vitis rotundifolia*), roundleaf greenbrier (*Smilax rotundifolia*), and laurel greenbrier (*Smilax laurifolia*).

Protected Species Literature and Records Search

PEC personnel conducted a protected species literature and records search in November 2013 to determine the presence of known occurrences of federally- and state-listed animal and plant species on or within a one-mile radius of the Project Area. The literature and records search included review of the following resources:

- The USFWS' South Carolina List of At-Risk, Candidate, Endangered, and Threatened Species for Richland and Lexington counties, last updated October 23, 2013
- The SCDNR Heritage Trust Program's Rare, Threatened, and Endangered Species Database GIS layer [SC_StatewideEOs.lyr], last updated June 2013.

The literature and records search revealed two known occurrences of bald eagle (*Haliaeetus leucocephalus*) within one mile of the Project Area. The search also revealed that the Project Area is located within or within one mile of three 30-square mile areas and two one-square mile areas of four historic occurrences of nestronia (*Nestronia umbellula*), four occurrences of winter grape-fern (*Botrychium lunarioides*), four occurrences of sandhills milkvetch (*Astragalus michauxii*), one occurrence of redlip shiner (*Notropis chiliticus*), one occurrence of blacknose dace (*Rhinichthys obtusus*), one occurrence of spatulate seedbox (*Ludwigia spathulata*), and one occurrence of red standing-cypress (*Ipomopsis rubra*). These large occurrence areas are due to the lack of accuracy in the original reporting of these historic occurrences. The records search also reflects that one known occurrence of shoals spider-lily (*Hymenocallis coronaria*) is located approximately 700 feet south of the Project Area where it crosses the Broad River. All of these species, with the exception of the bald eagle, are state-listed; none are federally-listed. The bald eagle is no longer considered a federally threatened or endangered species, but it continues to be protected under the Bald and Golden Eagle Protection Act (BGEPA).

Ninety (90) species of federally- and state-listed plants and animals either occur or potentially occur in Richland and Lexington counties. These species, as well as the results of the literature and records search, are summarized in Appendix A, Table 1. Because of the large number of species listed in the two counties, this report addresses only those species for which appropriate habitat was located within the Project Area (40 total, nine animals and 31 plants).

Species Descriptions and Results

Between August and December 2013, PEC personnel conducted a protected species survey for federally- and state-listed threatened and endangered species and a habitat assessment for state-listed S1, S2, and S3 species within the Project Area. This section addresses the findings of the survey and habitat assessment.

ANIMALS

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is primarily riparian, associated with rivers, coasts, and lakes, usually nesting near bodies of water where it feeds. Selection of nesting sites varies depending on the species of trees growing in a particular area, but in the Southeast, nests are constructed in dominant or codominant pines or cypress. Many nests are used annually. In South Carolina, bald eagles typically nest from October 1 through May 15.

While the bald eagle is no longer listed as federally threatened or endangered, it is still protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). Under BGEPA, the National Bald Eagle Management Guidelines protect habitat for the species although the protective buffers are smaller than the earlier requirements under the Endangered Species Act. Bald eagle is listed by SCDNR as State Endangered. The SCDNR database reflects one known occurrence of this species approximately one-half mile east of the Project Area on the north side of the Saluda River. SCDNR also reflects a second known occurrence (last observed in 1977) somewhere within an approximately one square mile area of the Project Area where the proposed line crosses the Broad River en route to the Lyles substation. PEC did not observe this occurrence during field investigation of the Project Area. PEC identified an additional bald eagle nest not shown in the SCDNR database. This nest is located on the south side of the Saluda River, approximately 500 feet west (upstream) of the Project Area. PEC understands through discussion with Mr. Brandon Stutts with SCANA that this nest is active.

Shortnose Sturgeon (*Acipenser brevirostrum*)

The shortnose sturgeon inhabits rivers and estuaries. It is an anadromous fish that spawns in the coastal rivers along the east coast of North America from the St. John River in Canada to the St. Johns River in Florida. It prefers the nearshore marine, estuarine and riverine habitat of large river systems.

The species is listed by the USFWS as Endangered. The SCDNR database reveals no known occurrences within one mile of the Project Area, and none were observed during field investigations (no active collection methods were implemented).

Atlantic Sturgeon (*Acipenser oxyrinchus*)

Adult Atlantic sturgeon spawn in freshwater in the spring and early summer and migrate into estuarine and marine waters where they spend most of their lives. In some southern rivers a fall spawning migration may also occur. They spawn in moderately flowing water (46-76 cm/s) in deep parts of large rivers. It is likely that cold, clean water is important for proper larval development. Juveniles usually reside in estuarine waters for months to years. Subadults and adults live in coastal waters and estuaries when not spawning, generally in shallow (10-50 m depth) nearshore areas dominated by gravel and sand substrates. Long distance migrations away from spawning rivers are common.

The species is listed by the USFWS as Endangered. The SCDNR database reveals no known occurrences within one mile of the Project Area, and none were observed during field investigations (no active collection methods were implemented).

Wood Stork (*Mycteria americana*)

Wood storks typically nest in the upper branches of black gum (*Nyssa biflora*) or cypress (*Taxodium distichum*) trees that are in standing water. Standing water deters mammalian predators and is an essential element of colony sites. Storks require open access to nest trees and are frequently found in trees adjacent to open water areas. They frequently feed in large groups in open wetlands where prey species are available and water depths are less than 50 cm (20 inches). Forested riverine floodplain habitats are frequently used, but a variety of ponds, ditches and diked marsh impoundments are important habitats. Use of these habitats is enhanced by receding water. Storks also forage around low tide along many coastal tidal creeks.

The species is listed by the USFWS as Endangered. The SCDNR database reveals no known occurrences within one mile of the Project Area, and none were observed during field investigations.

Star-nosed Mole (*Condylura cristata*)

The coastal and sandhills habitats for star-nosed moles include pocosins, wetlands, saturated bottomlands, and long-leaf pine habitat. Neither forest age nor successional stage has been reported as a critical factor determining habitat suitability for the star-nosed mole (Laerm *et al.* 2005a). It is listed by SCDNR as rare or uncommon in the state (S3?). There are no known occurrences of this species within one mile of the Project Area.

Carolina Darter (*Etheostoma collis*)

This fish inhabits small to moderate sized streams in areas of low current velocity. Habitat substrates preferred by this species are usually characterized by mud, sand and sometimes bedrock. This darter seems to be tolerant of fine sediments covering the substrate it inhabits.

The SCDNR lists the species as State Threatened (ST), and their database reveals no known occurrences within one mile of the Project Area. None were observed during field investigations, though no active collection methods were implemented.

Blacknose Dace (*Rhinichthys obtusus*)

The blacknose dace is found in small to medium size coolwater creeks with slow to rapid current and a diverse substrate of sand, gravel, and rock. In South Carolina, blacknose dace are found in the upper Savannah River drainage and Saluda River system in the Blue Ridge and inner piedmont ecoregions. The SCDNR lists the blacknose dace as S1. There is one historic occurrence of the species somewhere within a 30-mile radius of the subject site. This large occurrence area is due to the lack of accuracy in the original reporting of the historic occurrence.

Pine Barrens Treefrog (*Hyla andersonii*)

This species' habitat consists of herb shrub bogs, pocosins, and other related communities in the sandhills. It prefers transition zones on the downslopes of sandhills where water percolates out of the soil in some sort of seepage zone.

The SCDNR lists the pine barrens treefrog as State Threatened (ST), and their database reveals no known occurrences within one mile of the Project Area. None were observed during field investigations.

Creeper (*Strophitus undulatus*)

Creeper is a mussel that lives in shallow water in both small streams and large rivers. It inhabits a variety of substrates, from silt to boulder fields. In South Carolina, it has been found at several locations: Cloud's Creek, in the Steven's Creek basin; Big Cedar Creek in Richland County; the Lynches River and its tributary, Flat Creek; the Catawba River; the Pee Dee River; and the Congaree River. The SCDNR lists creeper as S2, and their database reveals no known occurrences within one mile of the Project Area.

PLANTS

Elliott's Bluestem (*Andropogon gyrans* var. *stenophyllus*)

Elliott's Bluestem grows in ditches, bogs, savannahs, and pond margins of the coastal plain, from eastern Texas to North Carolina. It is listed by SCDNR as critically imperiled state-wide because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation (S1). There are no known occurrences of the species within one mile of the Project Area.

Piedmont Three-awned Grass (*Aristida condensata*)

Piedmont three-awned grass grows on sandy hills, and in pine and oak barrens in the southeastern United States. This species is listed S2 by SCDNR. There are no known occurrences of the species within one mile of the Project Area.

Purple Balduina (*Balduina atropurpurea*)

Purple balduina occurs in pitcher plant bogs, wet pinelands and savannas. SCDNR classifies it as an S1 species. The records search revealed no known occurrences of this species within one mile of the Project Area.

Winter Grape-fern (*Botrychium lunarioides*)

The habitat for winter grape-fern consists of open grassy places in prairies, cemeteries, and weedy roadsides. The species is listed by SCDNR as S1. There are four historic occurrences of the species somewhere within a 30-mile radius of the Project Area. This large occurrence area is due to the lack of accuracy in the original reporting of the historic occurrence.

Northern Burmannia (*Burmannia biflora*)

Northern burmannia is found in low woods, pond margins, savannas, bogs, swamps, ditches, and pine barrens. It is listed by SCDNR as S2. There are no known occurrences of the species within one mile of the Project Area.

Pine-barrens Reed-grass (*Calamovilfa brevipilis*)

This species is found on moist to dry pine barrens, savannah, sandy swamps, bogs, and swamp edges. It is listed by SCDNR as S1. There are no known occurrences of the species within one mile of the Project Area.

Cherokee sedge (*Carex cherokeensis*)

Cherokee sedge occurs in floodplain forests, mesic deciduous forests, wet clearings and swamp forests, stream banks, acid seeps, margins of sinkholes, and dolomite glades. It is listed by SCDNR as S2. There are no known occurrences of the species within one mile of the Project Area.

Ravenfoot Sedge (*Carex crus-corvi*)

This species is found in seasonally saturated or inundated soils in wet meadows, marshes, swamps, and alluvial bottomlands. It is listed by SCDNR as S2. There are no known occurrences of the species within one mile of the Project Area.

Elliott's Sedge (*Carex elliotii*)

Elliott's sedge requires acidic soil in swamp forests and forest openings, open seeps, sandy and peaty pond shores. The species is listed by SCDNR as S1. There are no known occurrences of the species within one mile of the Project Area.

Robbins Spikerush (*Eleocharis robbinsii*)

This species occurs in shallow waters of fresh lakes and ponds with sandy-peaty soils. It is listed by SCDNR as S2. There are no known occurrences of the species within one mile of the Project Area.

Woolly Huckleberry (*Gaylussacia mosieri*)

Woolly huckleberry is located in pitcher plant bogs, hillside seepage bogs, wet pine savannas, and flatwoods. This species is listed S1 by SCDNR. There are no known occurrences of the species within one mile of the Project Area.

Shoals Spider-lily (*Hymenocallis coronaria*)

Shoals spider-lily habitat consists of rocky shoals of Piedmont river systems above and at the Fall Line. This species is listed S2 by SCDNR. According to the SCDNR database, there is one known occurrence of the species approximately 700 feet south of the Project Area in the Broad River.

Creeping St. Johns-wort (*Hypericum adpressum*)

SCDNR lists creeping St. John's-wort as an S2 species. It occurs along sandy pond margins (especially those with strong seasonal changes in the water level), and in wet meadows and bogs. The records search did not reveal any occurrences of this species within one mile of the Project Area.

Small-head Gayfeather (*Liatris microcephala*)

Small-head gayfeather is found on outcrops of granite and sandstone, rocky slopes, sandy stream banks, and openings in pine-oak and oak barrens. This species is listed S1 by SCDNR. There are no known occurrences of the species within one mile of the Project Area.

Carolina Bugleweed (*Lycopus cokeri*)

Carolina bugleweed habitat consists of streamhead pocosins, sandhill seeps, clay-based Carolina bays, and pine savannas. This species is listed S2 by SCDNR. There are no listed known occurrences of the species within one mile of the Project Area.

Canada Moonseed (*Menispermum canadense*)

Canada moonseed is a vine that prefers moist woods and hedges near streams. It also grows in deciduous woods and thickets, along streams, bluffs and rocky hillsides, and fencerows. It is shade tolerant from sea level to 700 meters. Canada moonseed is listed by SCDNR as imperiled state-wide/rare or uncommon in the state (S2/S3). There are no known occurrences of the species within one mile of the Project Area.

Piedmont Water-milfoil (*Myriophyllum laxum*)

Piedmont water-milfoil is located on the Fall Line in sandhill ponds, spring runs, limesink or spring-fed ponds, and clear sand-bottomed creeks through Atlantic white cedar forests. This species is listed S2 by SCDNR. There are no known occurrences of the species within one mile of the Project Area.

Canby's Dropwort (*Oxypolis canbyi*)

Canby's dropwort is found in coastal plain habitats including wet meadows, wet pineland savannas, ditches, sloughs, and around the edges of cypress-pine ponds. The healthiest populations seem to occur in open bays or ponds which are wet most of the year and have little or no canopy cover. Ideal soils have a medium to high organic content and a high water table. They are also acidic, deep, and poorly drained. The species is listed by USFWS as federally Endangered. There are no known occurrences of the species within one mile of the Project Area, and none were observed during field investigations.

Piedmont Cowbane (*Oxypolis ternata*)

Piedmont cowbane grows in seepages in the sandhills and pine savannas in the coastal plain. This species is listed S1 by SCDNR. There are no known occurrences of the species within one mile of the Project Area.

Green-fringe Orchid (*Platanthera lacera*)

This species of orchid is found in sphagnum bogs, alluvial and swamp forests, stream banks, riparian meadows, sand flats, moist and seeping slopes, prairies, roadside banks, ditches, old fields, and borrow pits. It is listed by SCDNR as S2. There are no known occurrences of the species within one mile of the Project Area.

Dwarf Milkwort (*Polygala nana*)

Dwarf milkwort habitat consists of moist open areas with sandy soil or pine barrens. This species is listed by SCDNR as S1. There are no known occurrences of the species within one mile of the Project Area.

Awned Meadowbeauty (*Rhexia aristosa*)

Awned meadowbeauty is found in wetlands, wet savannas, pond beds, flooded bays, cypress bays, pond-cypress savannas, wet pinelands, ditches, grass-sedge dominated Carolina bays, vernal ponds, depression

meadows, or limesink ponds. It is listed by SCDNR as S3. There are no known occurrences of the species within one mile of the Project Area.

Beakrush (*Rhynchospora macro*)

Beakrush is found on sands and sandy peats of savanna bogs and seeps and pinelands. The species is listed by SCDNR as S1. The records search revealed no occurrences within one mile of the Project Area.

Few-flowered Beak-rush (*Rhynchospora oligantha*)

This species occurs on sands and peats of bogs, depressions in savannas, open pinelands, and seeps. The species is listed by SCDNR as S2. The records search revealed no occurrences within one mile of the Project Area.

Chapman Beakrush (*Rhynchospora stenophylla*)

Chapman beakrush habitat consists of sands and peats of bogs, seeps, pond shores, flatwoods, and savannas. This species is listed by SCDNR as S2. There are no known occurrences of the species within one mile of the Project Area.

Sweet Pitcher-plant (*Sarracenia rubra*)

Habitat of the sweet pitcher-plant includes moist, grassy thickets near the margin of swamps, although it can also grow in dense shade. The soil is usually peaty and intensely acid. It is classified by SCDNR as a S3S4 species (S3 defined earlier, S4 defined as "Apparently Secure—At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors."). The records search revealed no known occurrences within one mile of the Project Area.

Aethusa-like Trepocarpus (*Trepocarpus aethusae*)

This species is found in floodplain forests, wet ditches, and disturbed sites. SCDNR lists it as an S1 species. Review of their database shows no known occurrences within one mile of the Project Area.

Carolina Fluff Grass (*Tridens carolinianus*)

Carolina fluff grass grows in pinelands and open sandy woods along the coastal plain. This species is listed S2 by SCDNR. The records search revealed no known occurrences of the species within one mile of the Project Area.

Weak Nettle (*Urtica chamaedryoides*)

Weak nettle occurs on rich, wooded slopes, bluffs, stream banks, swamps, waste places, and fields, often on limestone or nearly neutral soils. It is listed by SCDNR as S2. No known occurrences are located within one mile of the Project Area.

Rayner's Blueberry (*Vaccinium crassifolium* ssp. *sempervirens*)

Rayner's blueberry is a six- to eight-inch tall spreading evergreen groundcover. It produces a few small white flowers beginning late March and April, followed by even fewer sweet blue-black blueberries. The species is native to the American south where it prefers seepage bogs. The species is listed by SCDNR as S1. There are no known occurrences of the species within one mile of the Project Area.

Nuttall Warea (*Warea cuneifolia*)

This species occurs in sandy areas, scrub lands, sand hills, fields, open banks, oak-pinyon woods, and roadside embankments. SCDNR classifies it S1, and their database reflects no known occurrences within one mile of the Project Area.

Conclusions

Waters within the Project Area are fairly evenly distributed, flowing to tributaries associated with the Saluda River and the Broad River. The 124.1 acres that encompass the Project Area contain approximately 2.5 acres of jurisdictional wetlands and 1880 linear feet of streams, as well as additional waters areas including the Saluda River, the emergency spillway for the Saluda Shoals Dam, the Broad River, the Columbia Canal, and ponds. These additional areas total 7.4 acres (1030 linear feet). All wetlands and streams are located within existing ROW and therefore have been cleared of most shrubby and all canopy vegetation.

The literature and records search revealed two known occurrences of bald eagle (*Haliaeetus leucocephalus*) within one mile of the Project Area. An additional, undocumented occurrence of bald eagle is located approximately 500 feet west of the Project Area on the Saluda River. The records search also revealed that the Project Area is located within or within one mile of three 30-square mile areas and two one-square mile areas of four historic occurrences of nestronia (*Nestronia umbellula*), four occurrences of winter grape-fern (*Botrychium lunarioides*), four occurrences of sandhills milkvetch (*Astragalus michauxii*), one occurrence of redlip shiner (*Notropis chiliticus*), one occurrence of blacknose dace (*Rhinichthys obtusus*), one occurrence of spatulate seedbox (*Ludwigia spathulata*), and one occurrence of red standing-cypress (*Ipomopsis rubra*). These large occurrence areas are due to the lack of accuracy in the original reporting of these historic occurrences. The records search also shows that the Project Area is within approximately 700 feet of one occurrence of shoals spider-lily (*Hymenocallis coronaria*). All of these species, with the exception of the bald eagle, are state-listed; none are federally-listed. Potential habitat for 40 of the 90 listed species appears to be located within the project area. Of these 40 species, nine (9) are animals and 31 are plants (see Species Descriptions and Results section). No state- or federally-listed threatened or endangered species were observed within the Project Area.

APPENDIX A

Table 1. Federally- and State-Listed Species Occurring or Potentially Occurring in Lexington and Richland Counties

Scientific Name	Common Name	State/Federal Status or Rank	Known Occurrence within One Mile?	Habitat Within Project Area?
<i>Acipenser brevirostrum</i> *	shortnose sturgeon	FE/SE	No	Yes
<i>Acipenser oxyrinchus</i> *	Atlantic sturgeon	FE	No	Yes
<i>Andropogon gyrans</i> var. <i>stenophyllus</i>	Elliott's bluestem	S1	No	Yes
<i>Aristida condensata</i>	Piedmont Three-awned grass	S2	No	Yes
<i>Asplenium pinnatifidum</i>	Lobed spleenwort	S1	No	No
<i>Astragalus michauxii</i>	Sandhills milkvetch	S3	Yes	No
<i>Balduina atropurpurea</i>	Purple balduina	S1	No	Yes
<i>Botrychium lunarioides</i>	winter grape-fern	S1	Yes	Yes
<i>Burmannia biflora</i>	northern burmannia	S2	No	Yes
<i>Calamovilfa brevipilis</i>	Pine-barrens reed-grass	S1	No	Yes
<i>Carex cherokeensis</i>	Cherokee sedge	S2	No	Yes
<i>Carex collinsii</i>	Collins' sedge	S2	No	No
<i>Carex crus-corvi</i>	ravenfoot sedge	S2	No	Yes
<i>Carex elliotii</i>	Elliott's sedge	S1	No	Yes
<i>Carex socialis</i>	Social sedge	S1	No	No
<i>Cayaponia quinqueloba</i>	Cayaponia	S1	No	No
<i>Ceratiola ericoides</i>	Sandhills rosemary	S1	No	No
<i>Chrysoma pauciflosculosa</i>	Woody goldenrod	S1S2	No	No
<i>Collinsonia serotina</i>	Southern horse-balm	S1	No	No
<i>Condylura cristata</i> *	star-nosed mole	S3	No	Yes
<i>Corynorhinus rafinesquii</i> *	Rafinesque's big-eared bat	SE	No	No
<i>Dryopteris carthusiana</i>	Spinulose shield fern	S1	No	No
<i>Echinacea laevigata</i>	Smooth coneflower	FE	No	No
<i>Eleocharis robbinsii</i>	Robbins spikerush	S2	No	Yes
<i>Etheostoma collis</i> *	Carolina darter	ST	No	Yes
<i>Euonymus atropurpureus</i>	Eastern wahoo	S1	No	No
<i>Fundulus diaphanous</i> *	Banded killfish	S1	No	No
<i>Gaylussacia mosieri</i>	Woolly huckleberry	S1	No	Yes
<i>Haliaeetus leucocephalus</i> *	bald eagle	SE	Yes	No
<i>Hyla andersonii</i> *	Pine barrens treefrog	ST	No	Yes
<i>Hymenocallis coronaria</i>	Shoals spider-lily	S2	Yes	Yes
<i>Hypericum adpressum</i>	Creeping St. John's-wort	S2	No	Yes
<i>Hypericum nitidum</i>	Carolina St. John's-wort	S1	No	No
<i>Ilex amelanchier</i>	Sarvis holly	S3	No	No
<i>Ipomopsis rubra</i>	Red standing-cypress	S2	Yes	No
<i>Juncus abortivus</i>	Pinebarren rush	S2	No	No
<i>Liatris microcephala</i>	Small-head gayfeather	S1	No	Yes
<i>Lindera subcoriacea</i>	Bog spicebush	S3	No	No
<i>Ludwigia spathulata</i>	spatulate seedbox	S2	Yes	No
<i>Lycopus cokeri</i>	Carolina bugleweed	S2	No	Yes
<i>Lysimachia asperulifolia</i>	Rough-leaved loosestrife	FE	No	No
<i>Macbridea caroliniana</i>	Carolina bird-in-a-nest	S3	No	No
<i>Magnolia macrophylla</i>	Bigleaf magnolia	S1	No	No
<i>Magnolia pyramidata</i>	Pyramid magnolia	S1	No	No

Scientific Name	Common Name	State/Federal Status or Rank	Known Occurrence within One Mile?	Habitat within Project Area?
<i>Menispermum canadense</i>	Canada moonseed	S2S3	No	Yes
<i>Micrurus fulvius</i> *	eastern coral snake	S2	No	No
<i>Mycteria americana</i> *	wood stork	FE/SE	No	Yes
<i>Myriophyllum laxum</i>	piedmont water-milfoil	S2	No	Yes
<i>Nestronia umbellula</i>	Nestronia	S3	Yes	No
<i>Nolina georgiana</i>	Georgia beargrass	S3	No	No
<i>Notropis chiliticus</i> *	Redlip shiner	S1	Yes	No
<i>Ophioglossum vulgatum</i>	Adder's-tongue	S2	No	No
<i>Oxypolis canbyi</i>	Canby's dropwort	FE/S2	No	Yes
<i>Oxypolis ternata</i>	Piedmont cowbane	S1	No	Yes
<i>Paspalum bifidum</i>	bead-grass	S2	No	No
<i>Picoides borealis</i> *	red-cockaded woodpecker	FE/SE	No	No
<i>Pityopsis pinifolia</i>	Pine-leaved golden aster	S2	No	No
<i>Platanthera lacera</i>	green-fringe orchid	S2	No	Yes
<i>Polygala nana</i>	Dwarf milkwort	S1	No	Yes
<i>Potamogeton confervoides</i>	Algae-like pondweed	S1	No	No
<i>Prunus alabamensis</i>	Alabama black cherry	S1	No	No
<i>Psilotum nudum</i>	whisk fern	S1	No	No
<i>Pteroglossaspis ecristata</i>	crestless plume orchid	S2	No	No
<i>Quercus oglethorpensis</i>	Oglethorpe's oak	S3	No	No
<i>Rhexia aristosa</i>	awned meadowbeauty	S3	No	Yes
<i>Rhinichthys obtusus</i> *	Blacknose dace	S1	Yes	Yes
<i>Rhododendron eastmanii</i>	May white	S2	No	No
<i>Rhynchospora alba</i>	White beakrush	S1	No	No
<i>Rhynchospora inundata</i>	drowned hornedrush	S2	No	No
<i>Rhynchospora leptocarpa</i>	Narrow-fruited beaksedge	S1	No	No
<i>Rhynchospora macra</i>	beakrush	S1	No	Yes
<i>Rhynchospora oligantha</i>	few-flowered beakrush	S2	No	Yes
<i>Rhynchospora pallida</i>	Pale beakrush	S1	No	No
<i>Rhynchospora stenophylla</i>	Chapman beakrush	S2	No	Yes
<i>Sagittaria isoetiformis</i>	Slender arrow-head	S3	No	No
<i>Sarracenia rubra</i>	Sweet pitcher-plant	S3S4	No	Yes
<i>Sporobolus teretifolius</i>	Wire-leaved dropseed	S1	No	No
<i>Strophitus undulatus</i> *	Creeping	S2	No	Yes
<i>Stylisma pickeringii</i> var. <i>pickeringii</i>	Pickering's morning-glory	S2	No	No
<i>Sylvilagus aquaticus</i> *	Swamp rabbit	S2S3	No	No
<i>Symphotrichum elliotii</i>	Elliott's aster	S3	No	No
<i>Tofieldia glabra</i>	White false-asphodel	S1S2	No	No
<i>Trepocarpus aethusae</i>	Aethusa-like trepocarpus	S1	No	Yes
<i>Tridens carolinianus</i>	Carolina fluff grass	S2	No	Yes
<i>Tridens chapmanii</i>	Chapman's redtop	S1	No	No
<i>Ursus americanus</i> *	black bear	S3	No	No
<i>Urtica chamaedryoides</i>	Weak nettle	S2	No	Yes
<i>Vaccinium crassifolium</i> ssp. <i>sempervirens</i>	Rayner's blueberry	S1	No	Yes
<i>Warea cuneifolia</i>	Nuttall warea	S1	No	Yes

Scientific Name	Common Name	State/Federal Status or Rank	Known Occurrence within One Mile?	Habitat within Project Area?
<i>Xyris chapmanii</i>	Chapman's yellow-eyed grass	S1	No	No

ST – State Threatened

SE – State Endangered

FT – Federally Threatened

FE – Federally Endangered

*Denotes animal species

S1 – Critically imperiled state-wide because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation.

S2 – Imperiled state-wide because of rarity or factor(s) making it vulnerable.

S3 – Rare or uncommon in state.

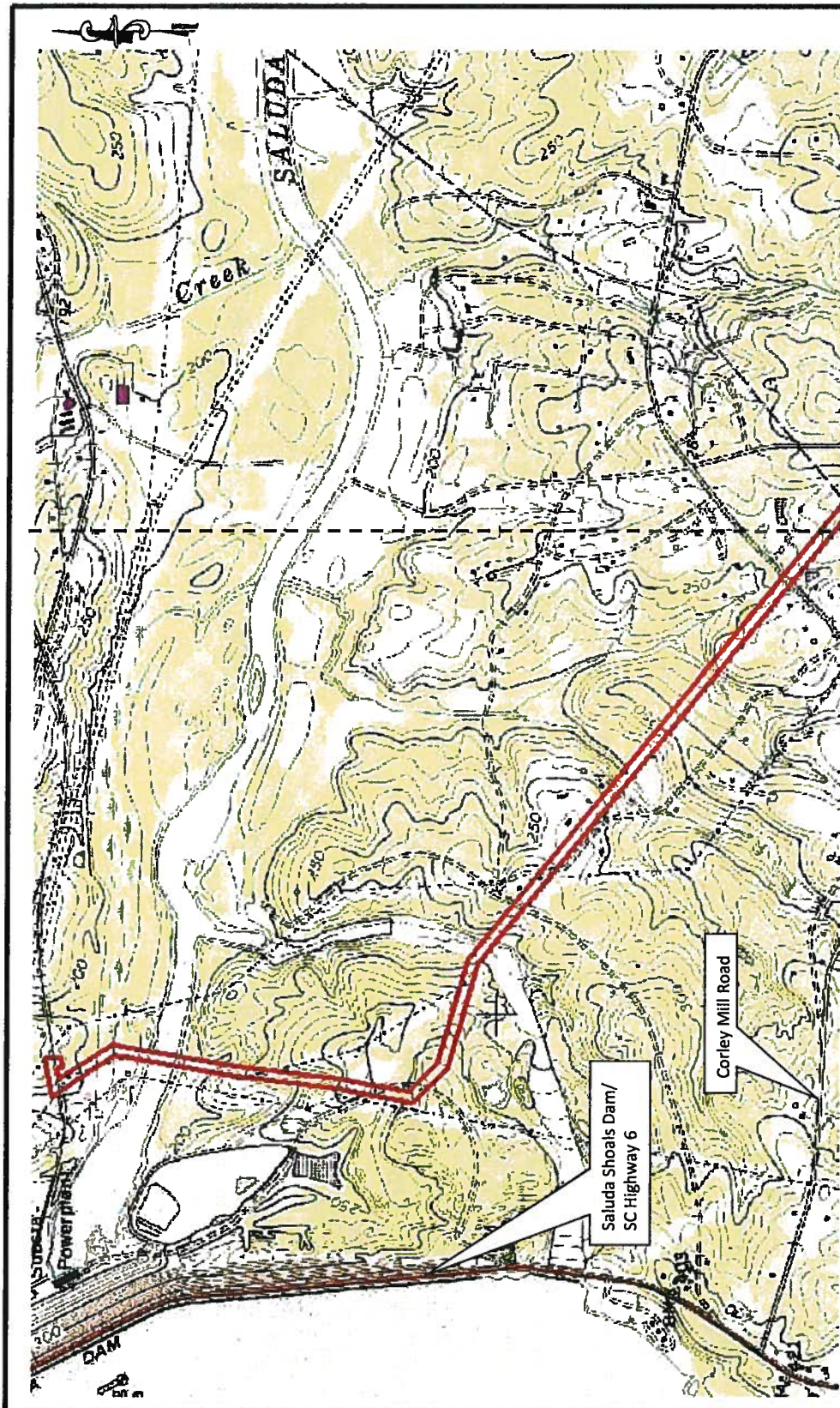
APPENDIX B



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Figure 1: Site Location Map
Lyles-Saluda River-Lake Murray 230 kV Line
Lexington and Richland Counties, SC
December 27, 2013



Matchline
Figure 2b

Approximate Scale: 1" = 1500'

Topo from SCDNR GIS Clearinghouse Database



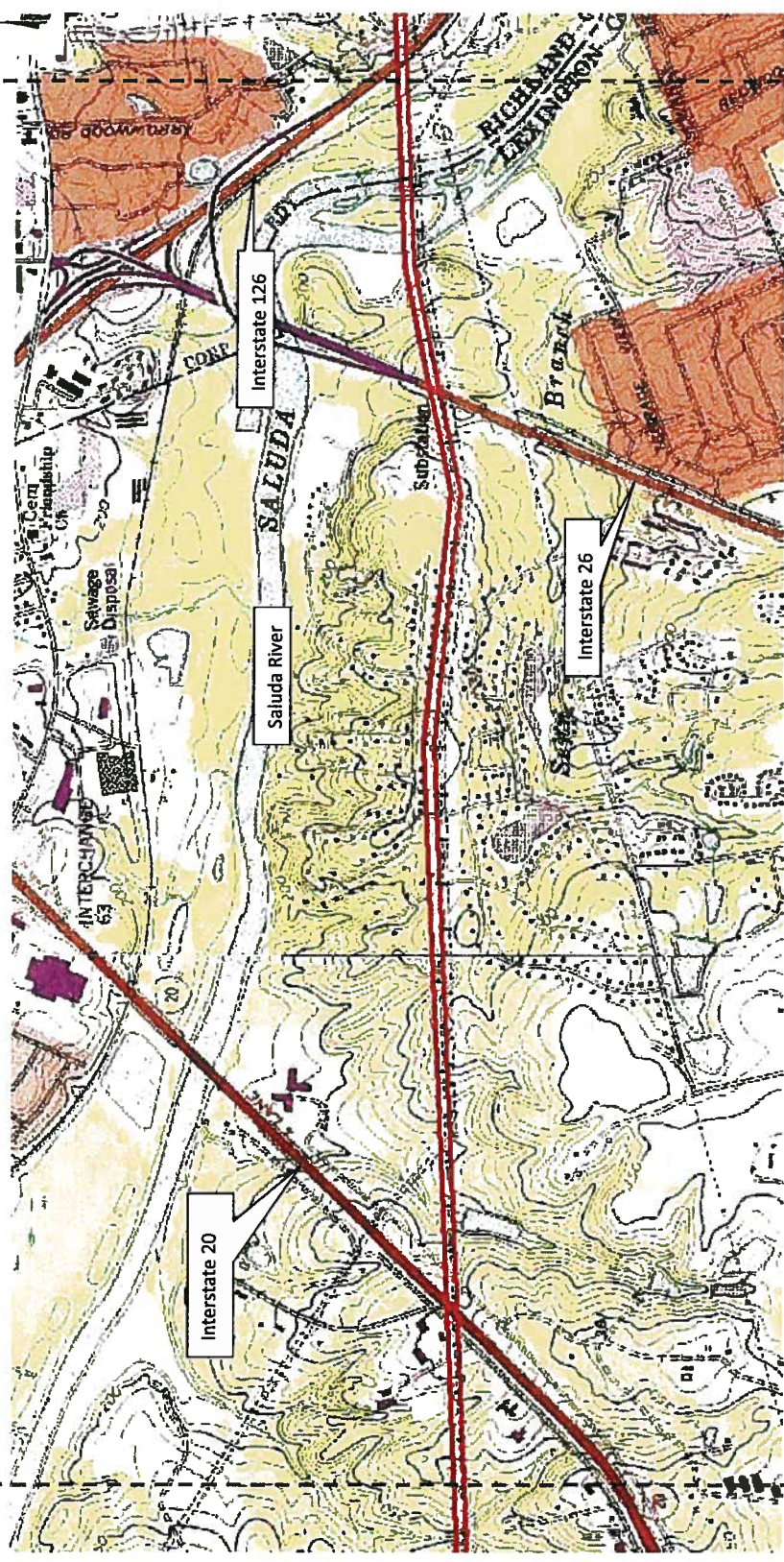
Palmetto
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Figure 2a: USGS Map
Lyles-Saluda River-Lake Murray 230 kV Line
Lexington and Richland Counties, SC
December 27, 2013

Matchline
Figure 2d

Matchline
Figure 2b



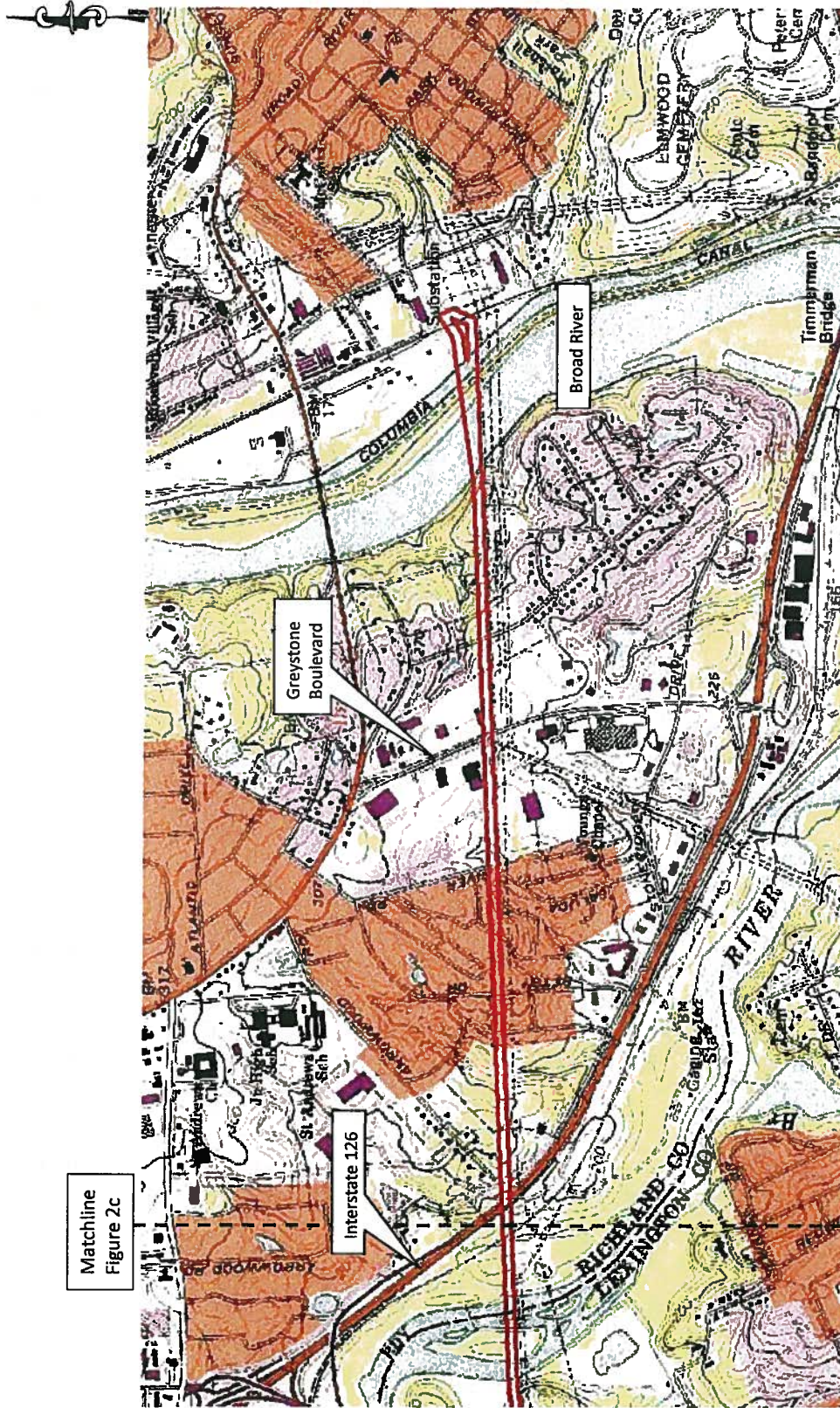
Approximate Scale: 1" = 1800'

Topo from SCDNR GIS Clearinghouse Database



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Figure 2c: USGS Map
Lyles-Saluda River-Lake Murray 230 kV Line
Lexington and Richland Counties, SC
December 27, 2013



Approximate Scale: 1" = 1800'

Topo from SCDNR GIS Clearinghouse Database



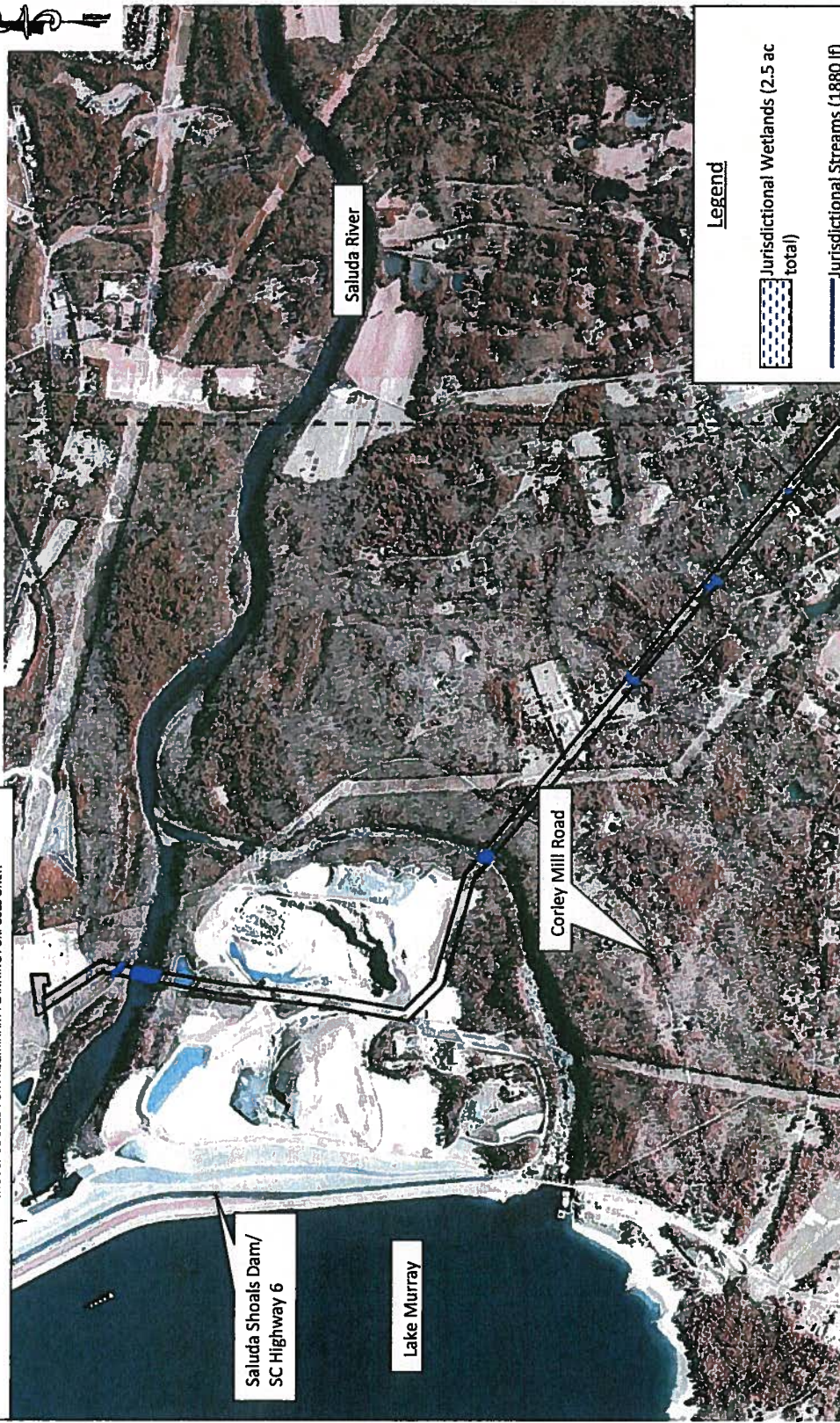
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Figure 2d: USGS Map
Lyles-Saluda River-Lake Murray 230 kV Line
Lexington and Richland Counties, SC
December 27, 2013

NOTE: WATERS WERE DELINEATED BY PALMETTO ENVIRONMENTAL CONSULTING, INC. (PEC) IN 2012 AND 2013. WATERS WERE MARKED IN THE FIELD WITH ORANGE "WETLAND BOUNDARY" FLAGGING. PEC GPS APPROXIMATED THE FLAGGING USING A TRIMBLE GEOXT HANDHELD UNIT. PLEASE NOTE THAT ONLY THE FLAGGED BOUNDARIES WITHIN THE ROW ADJACENT TO THE PROPOSED SALUDA RIVER SUBSTATION SITE HAVE BEEN VERIFIED BY THE U.S. ARMY CORPS OF ENGINEERS. THIS MAP SHOULD BE USED FOR PRELIMINARY PLANNING PURPOSES ONLY.

matchline



Legend

Jurisdictional Wetlands (2.5 ac total)

Jurisdictional Streams (1880 lf)

These numbers do not include the Saluda or Broad rivers, Columbia Canal, ponds, or Saluda Shoals dam spillway

Approximate Scale: 1" = 1,600'

Aerial from SCDNR GIS Clearinghouse Database



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Figure 3a: Waters Map
Lyles-Saluda River-Lake Murray 230 kV Line
Lexington and Richland Counties, SC
December 27, 2013

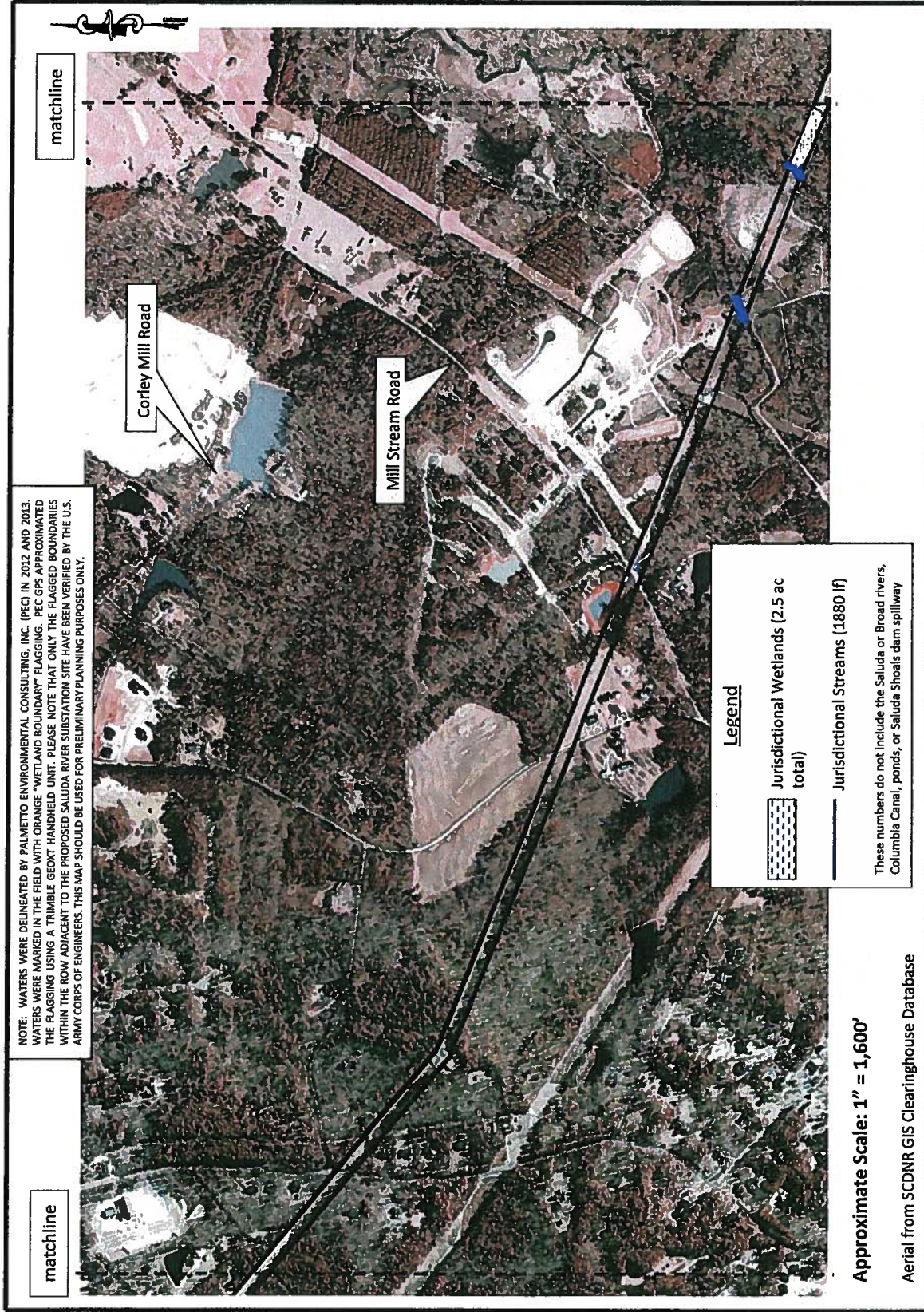


Figure 3b: Waters Map
 Lyles-Saluda River-Lake Murray 230 kV Line
 Lexington and Richland Counties, SC
 December 27, 2013

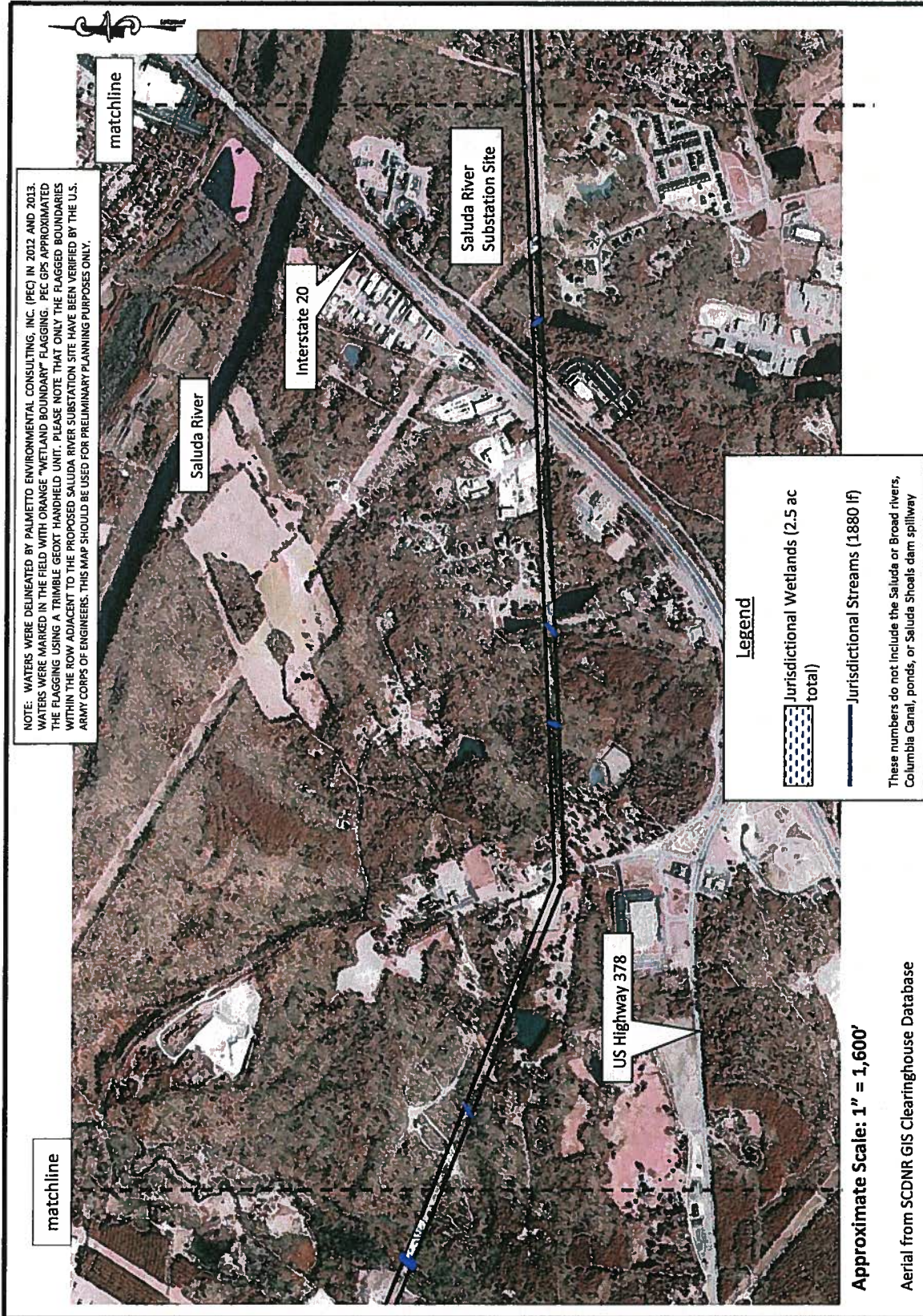
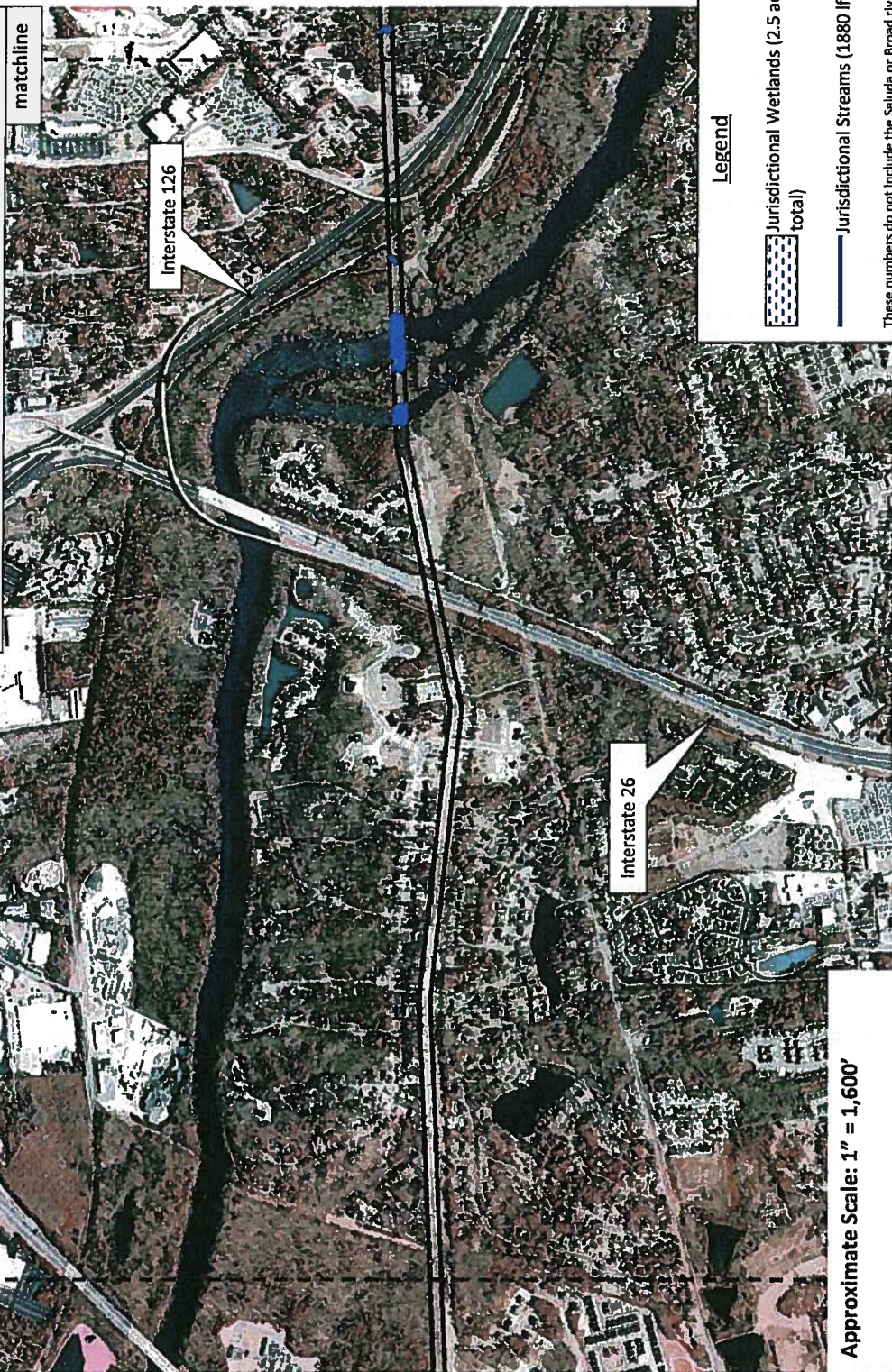


Figure 3c: Waters Map
 Lyles-Saluda River-Lake Murray 230 kV Line
 Lexington and Richland Counties, SC
 December 27, 2013

matchline

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Legend

- Jurisdictional Wetlands (2.5 ac total)
- Jurisdictional Streams (1880 lf)

These numbers do not include the Saluda or Broad rivers, Columbia Canal, ponds, or Saluda Shoals dam spillway

Approximate Scale: 1" = 1,600'

Aerial from SCDNR GIS Clearinghouse Database



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Figure 3d: Waters Map
Lyles-Saluda River-Lake Murray 230 kV Line
Lexington and Richland Counties, SC
December 27, 2013

matchline

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Legend

- Jurisdictional Wetlands (2.5 ac total)
- Jurisdictional Streams (1880 lf)

These numbers do not include the Saluda or Broad rivers, Columbia Canal, ponds, or Saluda Shoals dam spillway

Approximate Scale: 1" = 1,600'

Aerial from SCDNR GIS Clearinghouse Database



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Figure 3e: Waters Map
Lyles-Saluda River-Lake Murray 230 kV Line
Lexington and Richland Counties, SC
December 27, 2013